Dated November 20, 1987

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
before the
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, et al.	)	Docket Nos. 50-443-OL Docket Nos. 50-444-OL
	)	
Seabrook Station, Units 1 and 2)	)	On-site Emergency Planning and Safety Issues

AFFIDAVIT OF PING HUANG
ON MASS TRANSFER AND FLASHING FRACTION FOR
A STEAM GENERATOR TUBE RUPTURE AT 5 PERCENT POWER

I, Ping Huang, being duly sworn, depose and state:

1. I am employed by Westinghouse Electric Corporation as a Senior Engineer in Operational Safeguards Engineering in the Nuclear Technolgy Systems Division in the Power Systems Business Unit.
2. My professional qualifications are attached hereto and marked "A".
3. The purpose of my affidavit is to present the integrated break flow and flashing fraction from an analysis of a steam generator tube rupture during steady state reactor operation at 5% of full power when the reactor has not operated above that power level.
4. The values for these parameters were determined for the reactor coolant system (RCS) and steam generator conditions at 5% of full power using the break flow model in the LOFTRAN program for a thirty

minute transient as was used in the steam generator tube rupture analysis reported in the FSAR.

5. Conservative values of the depressurization rate prior to reactor trip and RCS pressure and break flow rate after reactor trip were used.

6. Prior to reactor trip, the full power RCS depressurization rate which is lower than the depressurization rate at 5% power prior to reactor trip was used. This lower depressurization rate, which takes no credit for the effects of higher break flow rates resulting from lower temperatures in the hot and cold legs of the RCS at 5% power, is conservative because it results in in higher mass transfer from the RCS to the faulted steam generator.

7. In order to simplify the analysis, the equilibrium RCS pressure and break flow rate corresponding to the condition for which the flow out of the break equals the Safety Injection flow into the RCS was used throughout the transient after reactor trip until the event is terminated at thirty minutes rather than to model the pressure and flow rate transients as was done in the FSAR analysis. This is conservative because it does not take credit for the transient that would occur after reactor trip. The depressurization of the RCS due to the loss of RCS inventory will result in a safety injection (SI) actuation signal shortly after reactor trip. SI flow causes the an increase in RCS pressure until the equilibrium conditions are reached. Thus the mass transfer from the RCS to the faulted steam generator based on assuming the equilibrium conditions throughout

the transient after reactor trip is higher than the value that would have been obtained if the pressure and flow rate transients had been explicitly modeled.

8. The integrated mass transfer from the Reactor Coolant System (RCS) to the faulted steam generator resulting from the analysis of a steam generator tube rupture for the Seabrook Nuclear Power Plant for steady state operation at 5% of full power does not exceed 140,000 lbs. The break flow flashing fraction does not exceed 7.5%.

Further affiant sayeth not

Ping Huang

Ping Huang

SUBSCRIBED AND SWORN to before me
this 25 day of November, 1987.

Paulette Desmarais

NOTARY PUBLIC

[illegible] COUNTY
[illegible] EXPIRES JULY 10, 1990
[illegible] Association of Notaries

Ping H. Huang

My name is Ping H. Huang. My business address is P.O. Box 355, Pittsburgh, Pennsylvania 15230. I am employed by Westinghouse Electric Corporation as a Senior Engineer in Operational Safeguards Engineering of the Nuclear Technology System Division. I am a registered Professional Engineer in the State of Pennsylvania.

I graduated from National Tsinghua University of Taiwan in 1976 with a B.S. Degree in Nuclear Engineering. In 1980, I received a M.S. Degree in Nuclear Engineering from Pennsylvania State University. I have been a part time graduate student at Carnegie Mellon University from 1981 to present to pursue a Doctorate Degree in Nuclear Science and Engineering.

From March 1980 to January 1983, I was employed by the Nuclear Fuel Division of Westinghouse Electric Corporation as a Nuclear Engineer. My responsibilities included core design and fuel management for the fuel reloads, and development of new products to reduce fuel cycle costs and improve the margin to safety limits.

In January 1983, I accepted a position in the Nuclear Safety Department of the Nuclear Technology System Division of Westinghouse Electric Corporation as a Safety Analysis Engineer. My experience includes Large and Small Break Loss of Coolant Accident analysis, Steam Generator Tube Rupture (SGTR) analysis and development of Emergency Operating Procedures. Since December 1983 to present, my major assignments at Westinghouse have been related to the analysis of the Steam Generator Tube Rupture Accident. I have regularly performed SGTR analysis and evaluation for Westinghouse pressurizer water reactors. I have also been involved in the development of a new SGTR analysis methodology to resolve all the licensing issues related to the SGTR accident. The new SGTR analysis methodology was approved by the Nuclear Regulatory Commission in March 1987.